

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2002-330807

(43)Date of publication of application : 19.11.2002

(51)Int.Cl.

A45B 3/00
 A45B 3/04
 G01C 21/00
 G01S 5/14
 G08G 1/005
 H04M 1/00
 H04M 1/02
 H04M 1/21
 H04M 1/725
 H04M 11/04

(21)Application number : 2001-139123

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(22)Date of filing : 09.05.2001

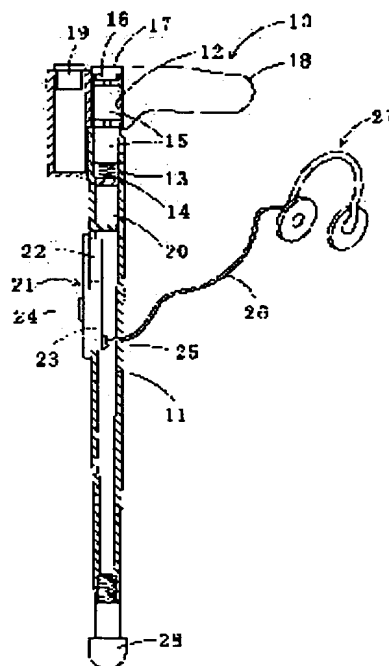
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(54) WALKING STICK FOR BLIND PERSON

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a walking stick for a blind person for detecting the presence of an obstacle and a walking position by the walking stick, informing another person of distress of a walking stick holder, and capable of securing safety by seeking assistance.

SOLUTION: A radiotelephone 21 is provided in a walking stick body 11 having a grip 18 in the upper part. By pushing a push button 24 for the telephone arranged in the radiotelephone 21, a telephone call is made to a specific place to talk over the telephone.



LEGAL STATUS

[Date of request for examination]

01.04.2003

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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CLAIMS

[Claim(s)]

[Claim 1] The cane for blind persons characterized by for a specific location getting a telephone call and a message being possible by equipping with radiotelephony the body of a cane which has a handle in the upper part, and pushing the push button for a telephone connected to said radiotelephony.

[Claim 2] The cane for blind persons characterized by enabling the report of the location which the Global Positioning System control unit was built in said body of a cane, and was detected by this Global Positioning System control unit in the cane for blind persons according to claim 1 to a specific man by said radiotelephony.

[Claim 3] It is the cane for blind persons characterized by for said body of a cane having formed the sway sensor in the cane for blind persons according to claim 1 or 2, and enabling the report of the output of this sway sensor to a specific man by said radiotelephony.

[Claim 4] The cane for blind persons characterized by having the sensor section which detects an obstruction, and the alarm section which emits an alarm when this sensor section detected the obstruction on said body of a cane in the cane for blind persons given in any 1 term of claims 1-3.

[Claim 5] The alarm which said alarm section emits in the cane for blind persons according to claim 4 is a cane for blind persons characterized by consisting of any 1 of the Braille points formed in a sound, voice, and said handle, or 2 or more.

[Claim 6] The cane for blind persons characterized by connecting the head telephone of wireless or a cable to said radiotelephony, and a message being possible using this head telephone in the cane for blind persons given in any 1 term of claims 1-5.

[Claim 7] The cane for blind persons which the head telephone of wireless or a cable is connected to said radiotelephony, and is characterized by having the head telephone output section which outputs said alarm to said head telephone in said alarm section in the cane for blind persons according to claim 4 or 5.

[Claim 8] It is the cane for blind persons characterized by the class of sound which said sensor section is a supersonic sensor in the cane for blind persons given in any 1 term of claims 4, 5, and 7, judges an object by the strength of a reflected sound, and is emitted from said alarm section according to the class of this object changing.

[Claim 9] The sound which the micro horn was prepared in said body of a cane, and was received by this micro horn in the cane for blind persons according to claim 7 is a cane for blind persons characterized by being inputted into said head telephone through said alarm section.

[Claim 10] The cane for blind persons characterized by said alarm section generating a special sound on said handle by preparing the push button for alarms and pushing this push button for alarms in the cane for blind persons given in any 1 term of claims 4, 5, 7, and 8.

[Claim 11] It is the cane for blind persons characterized by for said body of a cane consisting of a pipe in the cane for blind persons given in any 1 term of claims 1-10, and containing all devices inside this pipe.

[Claim 12] The cane for blind persons characterized by enabling charge of the cell which the solar battery was formed in the upper part of said body of a cane, and was formed in the interior of said body of a cane in the cane for blind persons given in any 1 term of claims 1-11.

[Claim 13] The cane for blind persons characterized by forming the lighting lamp which can be turned on if needed in said body of a cane in the cane for blind persons given in any 1 term of claims 1-12.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the cane for blind persons which can detect its location while a visually impaired person (blind person) walks. [an obstruction or]

[0002]

[Description of the Prior Art] Conventionally, the visually impaired person is detecting and walking the safe direction, having a cane and exploring a perimeter, in order to check existence of obstructions, such as a wall acting as the failure of a walk, a stone, and a level difference. Moreover, it is accompanied by the seeing eye dog used as instead of [of a visually impaired person's eyes], he walks, and I have an obstruction told, and also when I have you lead in the safe direction, it is.

[0003]

[Problem(s) to be Solved by the Invention] However, it was the walk carried out slowly, by the approach of walking, while exploring the direction along which he walks with the above-mentioned conventional cane, moreover, when walking distance was short, since the obstruction was detectable with the cane, it did not become a big problem, but when walking a few to a long distance, there was a problem that it was difficult to recognize how far he walked. Moreover, although it was few, when the old man to whom mne me fell attached a cane and did a walk etc., visual disturbance may have forgotten the path and the current position along which he has walked, and it might be unable to go home safely and it might lose its path. Moreover, in order to have been accompanied by the seeing eye dog and to have walked, many time amount and costs started training of a visually impaired person and a seeing eye dog, and many difficult problems had a seeing eye dog in generally spreading. This invention was made in view of such a situation, and detects existence of an obstruction and the location currently walked with a cane, and others are told about a plight, and it asks for assistance, and aims at offering the cane for blind persons which can secure insurance.

[0004]

[Means for Solving the Problem] By equipping with radiotelephony the body of a cane which has a handle in the upper part, and pushing the push button for a telephone connected to radiotelephony, the cane for blind persons concerning this invention in alignment with said purpose requires a telephone for a specific location, and the message of it is possible. Thereby, when the abnormalities of the body or a perimeter are sensed while the cane holder walked, the push button for a telephone is pushed, and it is in a specific location, for example, those who have you usually caring for can be contacted by telephone.

[0005] In the cane for blind persons concerning this invention, even if a report to a specific man (equipment is also included) is possible by radiotelephony in the location which the Global Positioning System control unit (henceforth GPS) was built in the body of a cane, and was detected by GPS, it is good. In this case, since the current position in which a cane holder is always by GPS can be checked and that positional information can be notified to a specific man by radiotelephony, even when its path is lost, it can protect immediately. In this case, you may make it tell that location, telephoning a specific man or equipment for every specific time amount, the radiotelephony prepared in the body of a cane from the specific man is telephoned, and you may make it find out about that location with voice or a digital signal. In the cane for blind persons concerning this invention, it forms a sway sensor, and even if a report to a specific man is possible for the body of a cane by radiotelephony in the output of a sway sensor, it is good.

In this case, since vibration generated by using the cane for blind persons is detected and that oscillating information can be notified by radiotelephony to a specific man, for example, a care worker, even if it is in the location where the care worker left actuation of a cane holder, it can check. In addition, although the receiving sound of a sway sensor may be transmitted as it is, it may change into another voice (for example, "it is [current] under use") or an another signal, and you may send.

[0006] In the cane for blind persons concerning this invention, you may have the sensor section which detects an obstruction, and the alarm section which emits an alarm when the sensor section detected the obstruction on the body of a cane. In this case, a cane holder (for example, visually impaired person) hears an alarm, it gets to know that there is an obstruction, and an obstruction is avoided by itself, or a surrounding man hears that alarm and a cane holder is helped, and an obstruction can be avoided or it can lead to a safe location. You may make it the alarm which the alarm section emits consist of any 1 of the Braille points formed in a sound, voice, and a handle, or 2 or more in the cane for blind persons concerning this invention. Using the sensor section which can detect existence of an obstruction in response to the supersonic wave emitted to the obstruction in this case, or the reflected wave of light, the alarm section generates a sound and voice according to an obstruction with a loudspeaker etc., in response to the fact that the detecting signal from the sensor section, and before a cane holder contacts an obstruction, the condition of an obstruction is detectable. Moreover, by displaying Braille points on the alarm section, also when cane holders are vision and a hearing-impaired person, existence of an obstruction can be told, and actuation which avoids an obstruction a little early can be performed. In the case of Braille points, it becomes the combination of the projection in which plurality projects.

[0007] In the cane for blind persons concerning this invention, the head telephone of wireless or a cable is connected to radiotelephony, and it may be made to be possible [a message] using a head telephone. In this case, even if a cane holder is a hearing impairment person, it can telephone to others using a head telephone. In addition, a microphone may be attached to a head telephone and may be formed in the body of a cane. In the cane for blind persons concerning this invention, you may have the head telephone output section which outputs an alarm to a head telephone with wireless or a cable in the alarm section. In this case, by making the alarm which tells the obstruction from the alarm section output from a head telephone, the cane holder who is a hearing impairment person can also be told about an alarm, and an obstruction can be avoided.

[0008] The sensor section is a supersonic sensor, and it judges an object by the strength of a reflected sound, and you may make it change the class of sound emitted from the alarm section according to the class of object in the cane for blind persons concerning this invention. In this case, the object with which the cane holder faced each other can detect a hard obstruction, a soft obstruction, etc., for example, and it can opt for the correspondence to an object beforehand. A micro horn is prepared in the body of a cane, and you may make it input into a head telephone the sound received by the micro horn through the alarm section in the cane for blind persons concerning this invention. In this case, even if a cane holder is a hearing impairment person, a surrounding sound can be heard and a surrounding situation can be known. The push button for alarms is prepared in a handle, and you may make it the alarm section generate a special sound by pushing the push button for alarms on it in the cane for blind persons concerning this invention. In this case, when a cane holder senses abnormalities for the body or the location which stands as for itself is not clear anymore, the special sound which pushes the push button for alarms and urges cautions to a perimeter can be generated, it can complain of a plight, and a surrounding man can be asked for assistance.

[0009] The body of a cane consists of a pipe and you may make it contain all devices, such as a cell, said radiotelephony, said alarm section, and some or all of said Global Positioning System control unit, inside a pipe in the cane for blind persons concerning this invention. In this case, moreover, each function part material, such as a cell, radiotelephony, the alarm section, and the Global Positioning System control unit, can be summarized in a compact lightweight in the body of a cane. In the cane for blind persons concerning this invention, even if charge of the cell or capacitor which the solar battery was formed in the upper part of the body of a cane, and was formed in the interior of the body of a cane is possible, it is good. In this case, the life of the cell used as power sources, such as the sensor section made to build in the cane for blind persons, the alarm section, radiotelephony, and GPS, can be lengthened. In the cane for blind persons concerning this invention, the lighting lamp which can be turned on may be formed in the body of a cane if needed. In this case, also in night, a surrounding man can understand actuation of a cane holder and the

risk from an automobile or a bicycle can be prevented.

[0010]

[Embodiment of the Invention] Then, referring to the attached drawing, it explains per gestalt of the operation which materialized this invention, and an understanding of this invention is presented. The sectional side elevation of the cane for blind persons which drawing 1 requires for the gestalt of operation of the 1st of this invention here, The sectional side elevation of the cane for blind persons which drawing 2 requires for the block diagram of the cane for the said blind persons, and drawing 3 requires for the gestalt of operation of the 2nd of this invention, The sectional side elevation of the cane for blind persons which the sectional side elevation of the cane for blind persons which drawing 4 requires for the block diagram of the cane for the said blind persons, and drawing 5 requires for the gestalt of operation of the 3rd of this invention, and drawing 6 require for the block diagram of the cane for the said blind persons, and drawing 7 requires for the gestalt of operation of the 4th of this invention, and drawing 8 are the block diagrams of the cane for the said blind persons.

[0011] As shown in drawing 1 and drawing 2 , the cane 10 for blind persons concerning the gestalt of operation of the 1st of this invention is equipped with the pipe-like body 11 of a cane, the battery holder 12 which carries out opening to upper limit is formed in the body 11 of a cane, and the spring 14 for contact which has - side contact 13 is formed in the pars basilaris ossis occipitalis of a battery holder 12. While the cell 15 (a capacitor with large are recording electric energy is also included) which can be charged is contained, and the lid 17 which established + side contact 16 is attached in the upper limit of a battery holder 12 and closing opening of a battery holder 12, contact at a cell 15, - side contact 13, and + side contact 16 is received the battery holder 12 by the thrust of the spring 14 for contact. A handle 18 is attached in the upper limit section of the body 11 of a cane, on the other hand, a solar battery 19 is formed in an edge (at drawing 1 , it is left-hand side [body / of a cane / 11]), and the battery charger 20 which charges the power of a handle 18 generated with the solar battery 19 under the battery holder 12 on a predetermined electrical potential difference, 3V [for example,], at a cell 15 is formed.

[0012] In the center section of the body 11 of a cane, the radiotelephony 21 which consists of a small cellular-phone machine or PHS telephone is formed, it has the push button 24 for a telephone which consists of a switch whose radiotelephony 21 is made to turn on and off the receiver section 22, the transmission section 23, and radiotelephony 21, and power is supplied to radiotelephony 21 from the cell 15. The cane holder enables it to talk over the telephone to external telephone 21A of a specific location by pushing the push button 24 for a telephone. In addition, the push button 24 for a telephone may be formed in a handle 18, and may be connected to radiotelephony 21 through an electric wire. Form the head telephone terminal 25 in radiotelephony 21, and it enables it to connect through lead wire 26 free [the body 11 of a cane] for attachment and detachment of the head telephone 27 prepared in another object, and enables it to hear the voice received from the head telephone 27 by radiotelephony 21 if needed. In addition, when a head telephone 27 is a wireless type, lead wire 26 becomes unnecessary. The stop of the shoe section 28 is ****ed and carried out to the lower limit section of the body 11 of a cane.

[0013] Actuation of the cane 10 for blind persons concerning the gestalt of operation of the 1st of this invention is explained. The cane holder using the cane 10 for blind persons pushes the push button 24 for a telephone prepared in radiotelephony 21, when abnormalities are sensed to the body or a perimeter during a walk. Thereby, by radiotelephony 21, external telephone 21A of a specific location can be telephoned, and it can talk over the telephone using a head telephone 27, using the receiver section 22 and the transmission section 23 of radiotelephony 21. In this case, a specific man, for example, those who have you usually caring for, can be contacted by telephone, and it can respond to emergency. Moreover, it can talk over the telephone by using a head telephone 27, without being interfered also with a hearing impairment person by the surrounding sound. In addition, a small micro horn is attached in a head telephone 27, and it is used instead of the transmission section 23 of radiotelephony 21, and it may be made to be possible [a message] without bringing opening close to radiotelephony 21.

[0014] The cane 30 for blind persons concerning the gestalt of operation of the 2nd of this invention attaches GPS (Global Positioning System control unit)31, enables it to detect a cane holder's current position, and forms a sway sensor 32 in the cane 10 for blind persons concerning the gestalt of said 1st operation, and enables it to detect actuation of a cane holder on it, as shown in drawing 3 and drawing 4 . In addition, the same name and the same sign are attached about the component which is common in the gestalt of the 1st operation, and explanation is omitted. That is, GPS31 is formed under the solar battery

19 of a handle 18 formed in the edge on the other hand, a cane holder's positional information is detected by GPS31, any 1 or two or more positional information of voice, an alphabetic character, and an image are generated, and it enables it to transmit the positional information to external telephone 21A by radiotelephony 21. Moreover, the sway sensor 32 which detects vibration generated on the body 11 of a cane is formed in the lower part of the body 11 of a cane by walking using the cane 30 for blind persons.

[0015] Actuation of the cane 30 for blind persons applied to the gestalt of operation of the 2nd of this invention here is explained. Radiotelephony 21 is beforehand changed intermittently into the condition that it can telephone to specific men, such as a care worker and a family, at intervals of 10 – 30 minutes. And a cane holder's current position is checked by GPS31, and the positional information is intermittently notified to a specific man by radiotelephony 21. A specific man can take care of a cane holder immediately, when a cane holder loses his path and cannot check the present location, for example, since it is obtained by external telephone 21A which can output any 1 or two or more positional information of an alphabetic character and an image which consist a cane holder's positional information of voice and a digital signal serially. Moreover, the radiotelephony 21 prepared in the body 11 of a cane from the specific man is telephoned, and you may make it find out about the location with voice or a digital signal. Moreover, while a cane holder walks, in the case of a walk, a sway sensor 32 detects vibration generated on the cane 30 for blind persons, and a receiving sound (oscillating information) is generated. Oscillating information is inputted into radiotelephony 21, and is notified as an alarm tone by the radiotelephony 21 changed into the condition that it can talk over the telephone to a specific man intermittently, and a cane holder tells using the cane 30 for blind persons. Thereby, even if a specific man is in the distant location, for example, a house, he can check the inside of a walk of a cane holder, or actuation of whether to have stopped. In addition, although the receiving sound of a sway sensor 32 may be transmitted as it is, it may change into another voice (for example, "it is [current] under use") or an another signal, and you may send.

[0016] The cane 40 for blind persons concerning the gestalt of operation of the 3rd of this invention adds and prepares the supersonic sensor 41 and the alarm section 42 which are an example of the sensor section which detects an obstruction in the cane 30 for blind persons concerning the gestalt of said 2nd operation, detects an obstruction on it, and he is trying to make it generate an alarm, as shown in drawing 5 and drawing 6. In addition, the same name and the same sign are attached about the component which is common in the gestalt of the 2nd operation, and explanation is omitted. That is, the alarm section 42 which equips the center section of the body 11 of a cane with a loudspeaker 43 and the head telephone output section 44, and generates an alarm is formed. Head telephone terminal 44A is prepared in the head telephone output section 44, and it enables it to connect the head telephone 27 prepared in another object free [attachment and detachment] through lead wire 26 in the body 11 of a cane. In addition, the head telephone terminal 25 of the radiotelephony 21 prepared in the body 11 of a cane is connected to the head telephone output section 44 by the 1st link line 45. A supersonic wave is sent to the lower part of the body 11 of a cane toward the front (at drawing 5, it is left-hand side [body / of a cane / 11]), and the supersonic sensor 41 which detects the reflected sound reflected in the nearby obstruction is formed in it.

[0017] Thereby, a supersonic sensor 41 generates a body detecting signal by the reflected sound of the supersonic wave reflected in the obstruction, and the alarm section 42 generates an alarm generating signal according to a body detecting signal. While a body detecting signal detects an obstruction, he inputs an alarm generating signal into a head telephone 27 through the head telephone output section 44, and is trying to generate an alarm tone or alarm tone voice from a head telephone 27 in the alarm section 42. In addition, the alarm section 42 generates the sound of the frequency from which the class of obstruction is distinguished according to the strength of a reflected sound, for example, an obstruction differs the sound of a frequency high when hard according to the class of obstructions, such as a sound with a frequency low when soft, like the body like a wall. Moreover, you may make it change spacing generated instead of changing a frequency according to the class of obstruction. The Braille-points display 46 from which Braille points come up as a projection is formed in the center section (at drawing 5, it is right-hand side [body / of a cane / 11]) of the handle 18, and he is trying to display the easy predetermined Braille points which show an obstruction with the alarm generating signal from the alarm section 42 with the combination of two or more projections.

[0018] Actuation of the cane 40 for blind persons applied to the gestalt of operation of the 3rd of this invention here is explained. If a cane holder detects the obstruction which grasps the handle 18 of the cane 40 for blind persons, and is in the range of about 30cm-1m from a pedestrian with a supersonic sensor 41

during a walk, a supersonic sensor 41 will generate two or more kinds of body detecting signals according to the strength of the reflected sound reflected in the obstruction, and will be inputted into the alarm section 42. The alarm section 42 generates the alarm tone or alarm tone voice of a frequency according to the class of detected obstruction from a loudspeaker 43 and a head telephone 27 with the sound volume of extent which a cane holder hears. Thereby, cane holders, such as a visually impaired person, can detect a soft thing etc. like a hard thing and the body like a wall or a stairway in the condition of an obstruction, and before a cane holder contacts an obstruction, he can acquire the knowledge of an obstruction and can respond. Moreover, the alarm generating signal generated from the alarm section 42 is inputted into the Braille-points display 46, and gives an easy Braille-points indication of a "wall", a "man", etc., etc. in the Braille-points display 46, corresponding to an alarm generating signal. Thus, by displaying Braille points on the Braille-points display 46 of the alarm section 42, vision and a hearing-impaired person can also be told about existence of an obstruction and its condition, and actuation which avoids an obstruction a little early can be performed.

[0019] As shown in drawing 7 and drawing 8, the cane 50 for blind persons concerning the gestalt of operation of the 4th of this invention adds the push button 51 for alarms, the micro horn 52, and the lighting lamp 53 to the cane 40 for blind persons concerning the gestalt of said 3rd operation. In addition, the same name and the same sign are attached about the component common to the gestalt of the 3rd operation, and explanation is omitted. That is, the push button 51 for alarms which consists of a switch which the alarm section 42 is operated in the edge (it is left-hand side [body / of a cane / 11] at drawing 7) of a handle 18, and is made to generate a special sound is formed. He is trying for the alarm section 42 to generate a sound which is different from an alarm tone from a loudspeaker 43, for example, the special sound which sound volume is large and attracts attention, by pushing the push button 51 for alarms. Moreover, the micro horn 52 is formed in the pars intermedia of the body 11 of a cane. The micro horn 52 receives the sound generated around a cane holder, inputs the sound into the alarm section 42, and amplifies it, and he is trying to generate an alarm tone or voice from a loudspeaker 43 and a head telephone 27. Furthermore, by the 2nd link line's 54 connecting and pushing the push button 51 for alarms, the alarm section 42 and radiotelephony 21 make radiotelephony 21 a talk state through the alarm section 42, and make the message possible from radiotelephony 21 at the specific man. Under the micro horn 52, the push button 55 for lamps which consists of a switch which turns on and off the lighting lamp 53 which consists of light emitting diode with little power consumption or electroluminescence (EL), and the lighting lamp 53 is formed.

[0020] Actuation of the cane 50 for blind persons applied to the gestalt of operation of the 4th of this invention here is explained. It is received by the micro horn 52, and the sound and voice which are generated from a cane holder's perimeter are amplified by the alarm section 42, and generate a sound and voice from a head telephone 27 through the head telephone output section 44. In this case, even if a cane holder is a hearing impairment person, a surrounding sound can be heard and a surrounding situation can be known. Moreover, since the lighting lamp 53 lights up by pushing the push button 55 for lamps when a cane holder walks at night, also in night, a surrounding man can understand actuation of a cane holder and the risk from an automobile or a bicycle can be prevented. Moreover, when a cane holder senses abnormalities for the body or the location which stands as for itself is not clear anymore, the alarm section 42 generates the special sound which urges cautions to a perimeter which is different from an alarm tone from a loudspeaker 43 by pushing the push button 51 for alarms. Thereby, a surrounding man can be asked for assistance. Moreover, since a message becomes possible through external telephone 21A by pushing the push button 51 for alarms at a specific man from radiotelephony 21, while being able to talk a cane holder's present condition over the telephone, the special sound from a loudspeaker 43 is automatically told to a specific man.

[0021] As mentioned above, although the cane for blind persons concerning the gestalt of operation of this invention has been explained, this invention is not limited to a configuration given in the gestalt of the aforementioned operation at all, and also includes the gestalt and modification of other operations which are considered within the limits of the matter indicated by the claim. For example, although the gestalt of said operation explained the case where the alarm which the alarm section emits was displayed by the Braille points formed in a sound, voice, and a handle, an alarm may omit others using at least one in a sound, voice, and Braille points. Moreover, you may prepare in the interior of the body 11 of a cane instead of preparing a part or all of a solar battery 19 and GPS31 in a handle 18. Moreover, glove-like covering may

be attached in a handle 18 and the push button for a telephone and the push button for alarms may be attached in covering. Furthermore, it connects electrically, the hearing aid which a hearing impairment person uses is used instead of a head telephone, using radiotelephony, it is made to be possible [a message] or a hearing impairment person connects hearing aid and the head telephone output section of the alarm section so that transmission and reception of hearing aid and a cellular phone can be performed, and an alarm may be made for a hearing impairment person to hear clearly.

[0022]

[Effect of the Invention] Can connect by the telephone to those who push the push button for a telephone the time of a cane holder sensing abnormalities, for example since a specific location gets a telephone call by pushing the push button for the telephone which radiotelephony was prepared in the body of the cane which has a handle in the upper part in the cane for blind persons according to claim 1 to 13, and was prepared in radiotelephony and it was made to be possible [a message], and if needed, and are to a specific location, or assistance can ask.

[0023] Since the report of the location which the Global Positioning System control unit (GPS) was built in the body of a cane, and was especially detected by the Global Positioning System control unit in the cane for blind persons according to claim 2 to a specific man is enabled by radiotelephony, even when the location in which a cane holder is always checks and its path is lost by GPS, it can protect immediately. In the cane for blind persons according to claim 3, since the body of a cane forms a sway sensor and is enabling the report of the output of a sway sensor to a specific man by radiotelephony, a specific man detects vibration generated by using the cane for blind persons, and even if it is in the location which left actuation of a cane holder, he can check.

[0024] Since it has the sensor section prepared in the body of a cane, and the alarm section which emits an alarm when the sensor section detected the obstruction in the cane for blind persons according to claim 4, a cane holder hears an alarm, it gets to know that there is an obstruction, and an obstruction is avoided by itself, or a surrounding man hears the alarm and a cane holder is helped, and an obstruction can be avoided or it can walk safely. In the cane for blind persons according to claim 5, since the alarm which the alarm section emits consists of any 1 of the Braille points formed in a sound, voice, and a handle, or 2 or more, the alarm section generates a sound and voice according to an obstruction with a loudspeaker etc., in response to the fact that the detecting signal from the sensor section, and before a cane holder contacts an obstruction, it can detect the condition of an obstruction. Moreover, by displaying Braille points on the alarm section, also when cane holders are vision and a hearing-impaired person, existence of an obstruction can be told, and actuation which avoids an obstruction a little early can be performed. In the cane for blind persons according to claim 6, since the head telephone of wireless or a cable is connected to radiotelephony and it is made to be possible [a message] using a head telephone, a hearing impairment person can also contact a specific man if needed.

[0025] In the cane for blind persons according to claim 7, since it has the output section of a head telephone in the alarm section, by making the alarm which tells the obstruction from the alarm section output from a head telephone, the cane holder who is a hearing impairment person can also be told about an alarm, and an obstruction can be avoided. In the cane for blind persons according to claim 8, since he is trying for the sensor section to change the class of sound which is a supersonic sensor, judges an object by the strength of a reflected sound, and is emitted from the alarm section according to the class of object, it can detect the class of object with which the cane holder faced each other, and can opt for the correspondence to an object beforehand.

[0026] In the cane for blind persons according to claim 9, since he is trying to input into a head telephone the sound which the micro horn was prepared in the body of a cane, and was received by the micro horn, even if a cane holder is a hearing impairment person, a surrounding sound can be heard, the situation can be known, and it can respond to a surrounding environment immediately. Since he is trying for the alarm section to generate a special sound by preparing the push button for alarms in a handle, and pushing the push button for alarms in the cane for blind persons according to claim 10 When a cane holder senses abnormalities for the body or the location which stands as for itself is not clear anymore, the special sound which pushes the push button for alarms and urges cautions to a perimeter can be generated, it can complain of a plight, and a surrounding man can be asked for assistance.

[0027] In the cane for blind persons according to claim 11, since the body of a cane consists of a pipe and a cell, radiotelephony, the alarm section, and a part or all of GPS is contained inside the pipe, moreover,

the cane for blind persons can be constituted lightweight in a compact. In the cane for blind persons according to claim 12, since charge of the cell which the solar battery was formed in the upper part of the body of a cane, and was formed in the interior of the body of a cane is enabled, the life of the cell used as power sources, such as the sensor section made to build in the cane for blind persons, the alarm section, radiotelephony, and GPS, can be lengthened. In the cane for blind persons according to claim 13, since the lighting lamp which can be turned on is formed in the body of a cane if needed, also in night, a surrounding man can understand actuation of a cane holder and the risk from an automobile or a bicycle can be prevented.

[Translation done.]

*** NOTICES ***

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3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the sectional side elevation of the cane for blind persons concerning the gestalt of operation of the 1st of this invention.

[Drawing 2] It is the block diagram of the cane for the said blind persons.

[Drawing 3] It is the sectional side elevation of the cane for blind persons concerning the gestalt of operation of the 2nd of this invention.

[Drawing 4] It is the block diagram of the cane for the said blind persons.

[Drawing 5] It is the sectional side elevation of the cane for blind persons concerning the gestalt of operation of the 3rd of this invention.

[Drawing 6] It is the block diagram of the cane for the said blind persons.

[Drawing 7] It is the sectional side elevation of the cane for blind persons concerning the gestalt of operation of the 4th of this invention.

[Drawing 8] It is the block diagram of the cane for the said blind persons.

[Description of Notations]

The cane for blind persons, the body of 11:cane, 12 : 10: A battery holder, a 13:- side contact, 14: The spring for contact, 15:cell, a 16:+ side contact, 17:lid, 18 : A handle, 19 : A solar battery, 20:battery charger, 21:radiotelephony, a 21A:external telephone, 22: The receiver section, 23:transmission section, the push button for 24:telephones, 25 : A head telephone terminal, 26 : Lead wire, 27:head telephone, 28:shoe section, the cane for 30:blind persons, 31: GPS, 32:sway sensor, the cane for 40:blind persons, 41 : A supersonic sensor, 42: The alarm section, 43:loudspeaker, 44:head telephone output section, 44A : A head telephone terminal, 45: -- the 1st link line and 46: -- a Braille-points display, the cane for 50:blind persons, the push button for 51:alarms, a 52:micro horn, 53:lighting lamp, and 54: -- the 2nd link line and the push button for 55:lamps

[Translation done.]

* NOTICES *

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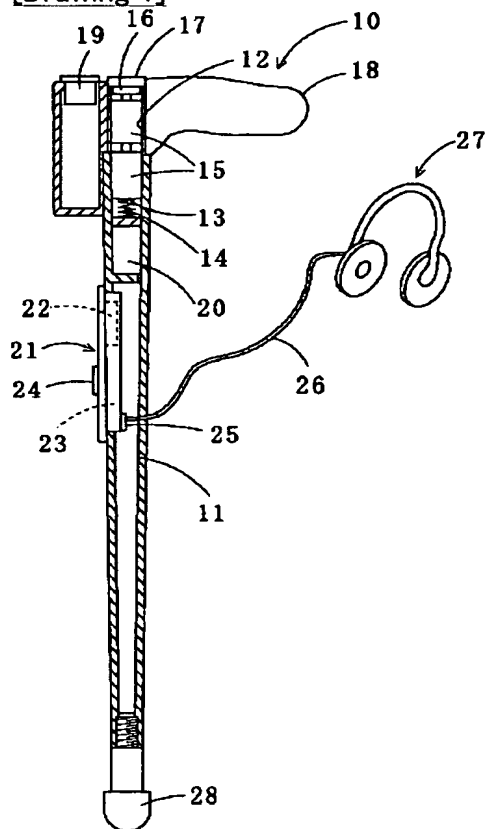
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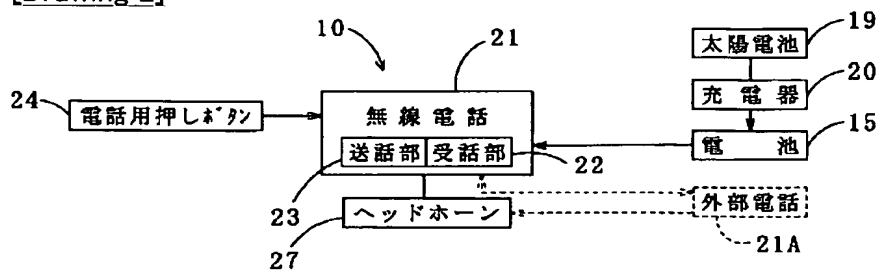
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DRAWINGS

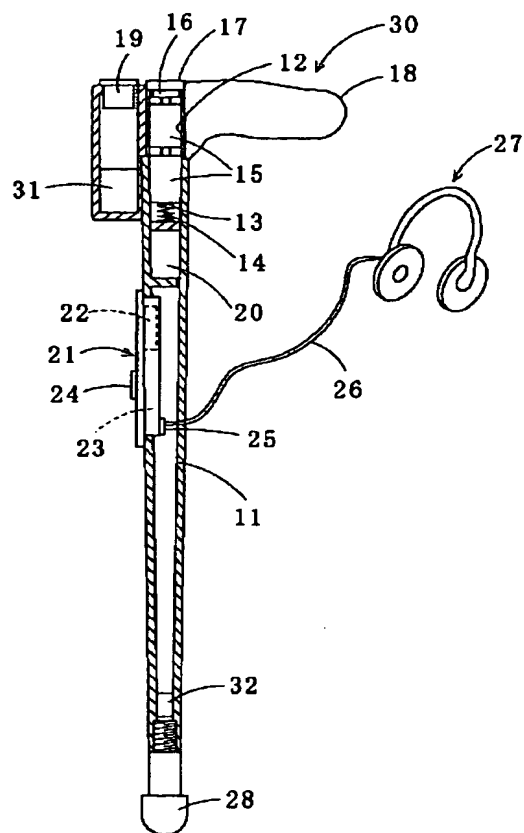
[Drawing 1]



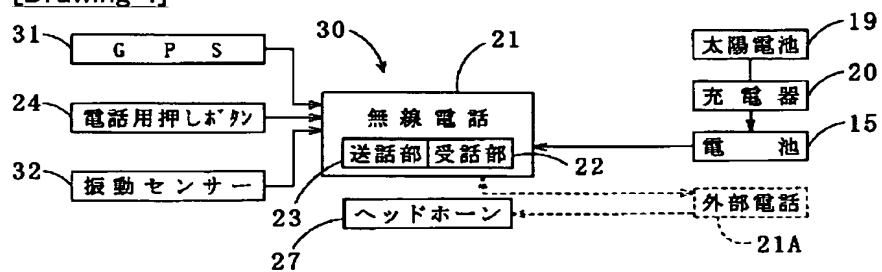
[Drawing 2]



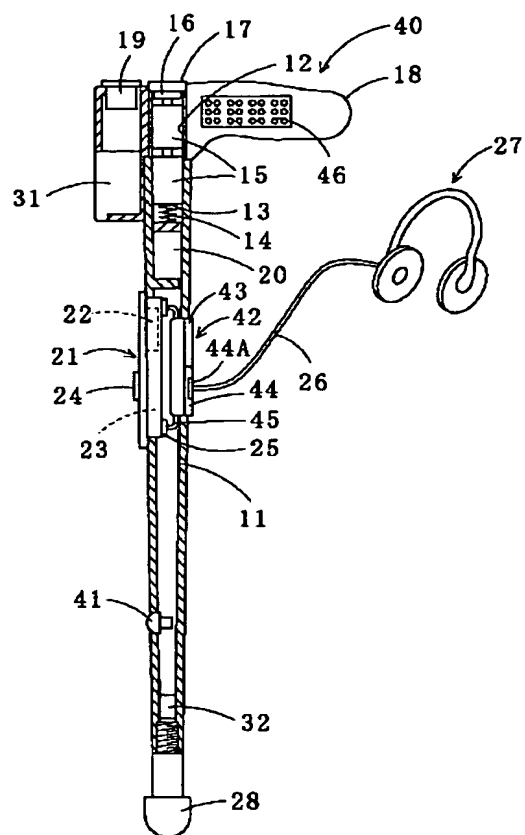
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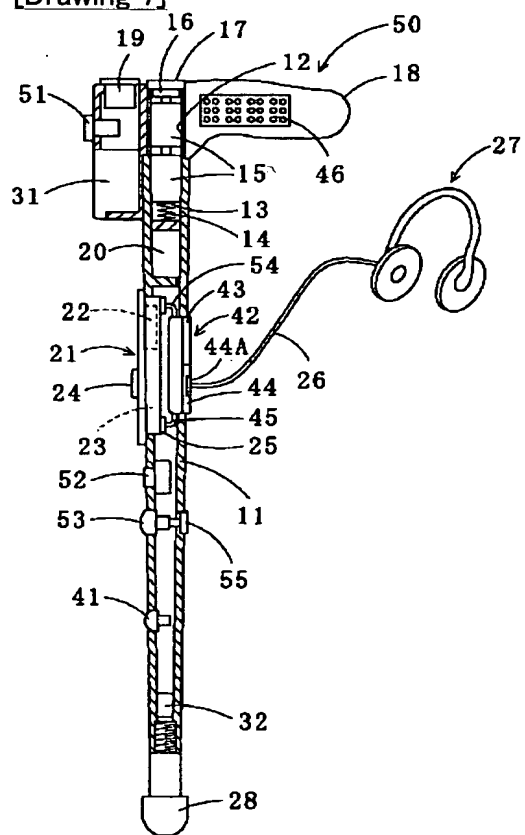
[Drawing 4]



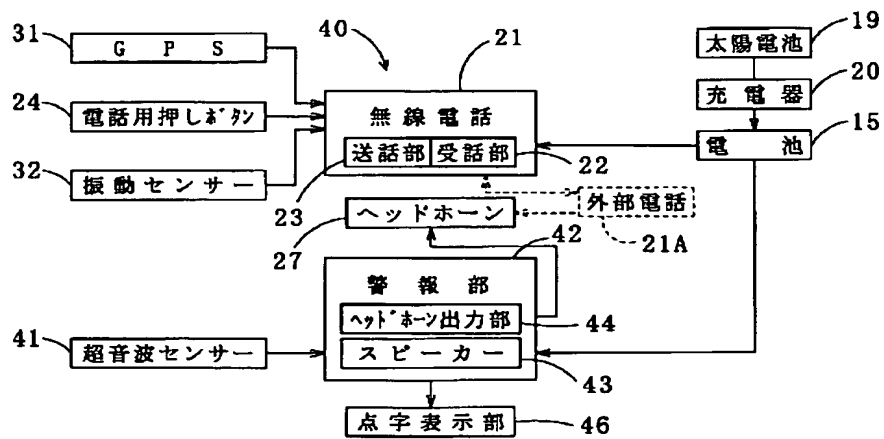
[Drawing 5]



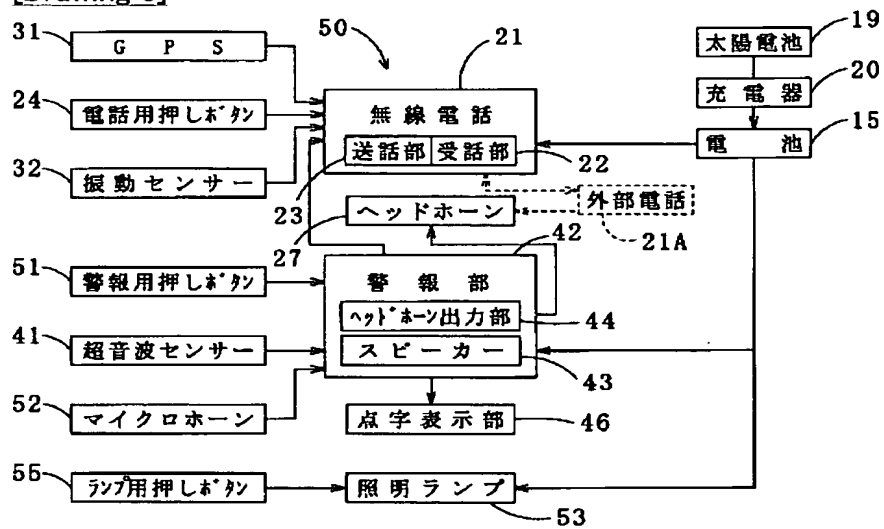
[Drawing 7]



[Drawing 6]



[Drawing 8]



[Translation done.]

(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開2002-330807

(P2002-330807A)

(43) 公開日 平成14年11月19日 (2002. 11. 19)

(51) Int. Cl.	識別記号	F I	テ-マ-ト*(参考)		
A 4 5 B	3/00	A 4 5 B	3/00	B	2 F 0 2 9
	3/04		3/04	D	3 B 1 0 4
G 0 1 C	21/00	G 0 1 C	21/00	Z	5 H 1 8 0
G 0 1 S	5/14	G 0 1 S	5/14		5 J 0 6 2
G 0 8 G	1/005	G 0 8 G	1/005		5 K 0 2 3
審査請求 未請求 請求項の数13 O L (全 10 頁) 最終頁に続く					

審査請求 未請求 請求項の数13 O L (全 10 頁) 最終頁に続く

(21) 出願番号 特願2001-139123(P2001-139123)

(22) 出願日 平成13年5月9日 (2001. 5. 9)

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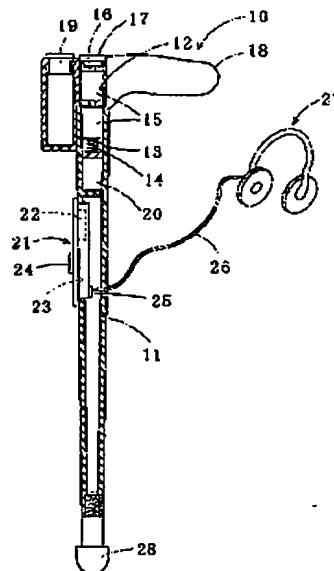
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(54) 【発明の名称】 盲人用杖

(57) 【要約】

【課題】 杖によって障害物の存在や歩行している位置を検知し、また他人に杖保持者の弱状を知らせ、援助を求めて安全を確保できる盲人用杖を提供する。

【解決手段】 上部に把手18を有する杖本体11に無線電話21が備えられ、無線電話21に設けられた電話用押しボタン24を押すことにより、特定場所に電話がかかり、通話ができる。



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【特許請求の範囲】

【請求項1】 上部に把手を有する杖本体に無線電話が備えられ、前記無線電話に接続された電話用押しボタンを押すことにより、特定場所に電話がかかり、通話ができることを特徴とする盲人用杖。

【請求項2】 請求項1記載の盲人用杖において、前記杖本体に全地球測位システム制御装置が内蔵され、該全地球測位システム制御装置によって検知された位置を前記無線電話によって特定の人に通報可能にしたことを特徴とする盲人用杖。

【請求項3】 請求項1又は2記載の盲人用杖において、前記杖本体は振動センサーを設け、該振動センサーの出力を前記無線電話によって特定の人に通報可能にしたことを特徴とする盲人用杖。

【請求項4】 請求項1～3のいずれか1項に記載の盲人用杖において、前記杖本体には、障害物を検知するセンサー部と、該センサー部が障害物を検知したことによって警報を発する警報部とを有することを特徴とする盲人用杖。

【請求項5】 請求項4記載の盲人用杖において、前記警報部が発する警報は、音、音戸、前記把手に設けられた点字のいずれか1又は2以上からなることを特徴とする盲人用杖。

【請求項6】 請求項1～5のいずれか1項に記載の盲人用杖において、前記無線電話には無線又は有線のヘッドホーンが接続され、該ヘッドホーンを利用して通話ができることを特徴とする盲人用杖。

【請求項7】 請求項4又は5記載の盲人用杖において、前記無線電話には無線又は有線のヘッドホーンが接続され、前記警報部には、前記警報を前記ヘッドホーンに出力するヘッドホーン出力部を有することを特徴とする盲人用杖。

【請求項8】 請求項4、5、7のいずれか1項に記載の盲人用杖において、前記センサー部は、超音波センサーであって、反射音の強さによって対象物を判断し、該対象物の種類によって前記警報部から発する音の種類が変わることを特徴とする盲人用杖。

【請求項9】 請求項7記載の盲人用杖において、前記杖本体にはマイクロホーンが設けられ、該マイクロホーンによって受信した音は前記警報部を介して前記ヘッドホーンに入力されることを特徴とする盲人用杖。

【請求項10】 請求項4、5、7、8のいずれか1項に記載の盲人用杖において、前記把手には、警報用押しボタンが設けられ、該警報用押しボタンを押すことにより前記警報部が特殊音を発生することを特徴とする盲人用杖。

【請求項11】 請求項1～10のいずれか1項に記載の盲人用杖において、前記杖本体はパイプからなり、該パイプの内部に全ての機器が収納されていることを特徴とする盲人用杖。

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【請求項12】 請求項1～11のいずれか1項に記載の盲人用杖において、前記杖本体の上部に太陽電池が設けられ、前記杖本体の内部に設けられた電池に充電可能にしていることを特徴とする盲人用杖。

【請求項13】 請求項1～12のいずれか1項に記載の盲人用杖において、前記杖本体には必要に応じて点灯可能な照明ランプが設けられていることを特徴とする盲人用杖。

【発明の詳細な説明】

10 【0001】

【発明の属する技術分野】本発明は、視覚障害者（盲人）が歩行中に障害物や自分の位置を検知することができる盲人用杖に関する。

【0002】

【従来の技術】従来、視覚障害者は、歩行の障害になる壁、石、段差等の障害物の存在を確認するために、杖を待って周囲を探りながら安全な方向を検知して歩行している。また、視覚障害者の目の代わりとなる盲導犬を連れて歩き、障害物を知らせてもらい、安全な方向に導いてもらう場合もある。

【0003】

【発明が解決しようとする課題】しかしながら、上記従来の杖によって歩く方向を探りながら歩行する方法では、ゆっくりした歩行で、しかも歩行距離が短いときには、杖によって障害物を検知できるので大きな問題にならないが、少し速くまで歩行するときは、どこまで歩いたかを認知することが難しいという問題があった。また、視覚障害は少ないが記憶力が低下した老人が杖について散歩などをしたときに、歩いてきた道や現在位置を忘れることがあり、安全に帰宅できなかつたり、道に迷ったりすることがあった。また、盲導犬を連れて歩くには、視覚障害者と盲導犬の訓練に多くの時間と費用がかかり、盲導犬が一般に普及するには多くの難しい問題があった。本発明はこのような事情に鑑みてなされたもので、杖によって障害物の存在や歩行している位置を検知し、また他人に窮状を知らせて援助を求め、安全を確保できる盲人用杖を提供することを目的とする。

【0004】

【課題を解決するための手段】前記目的に沿う本発明に係る盲人用杖は、上部に把手を有する杖本体に無線電話が備えられ、無線電話に接続された電話用押しボタンを押すことにより、特定場所に電話がかかり、通話ができる。これにより、杖保持者が歩行中に身体や周囲の異変を感じたとき等に、電話用押しボタンを押して特定場所にいる、例えば通意介護をしてもらっている人に電話によって連絡することができる。

【0005】本発明に係る盲人用杖において、杖本体に全地球測位システム制御装置（以下、GPSという）が内蔵され、GPSによって検知された位置を無線電話によって特定の人（装置も含む）に通報可能にしてもよ

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い、この場合、GPSによって常に杖保持者の居る現在位置を確認でき、その位置情報を無線電話によって特定の人に通報できるので、道に迷ったときでも直ちに保護することができる。この場合、特定時間毎に特定の人又は装置に電話をかけてその位置を知らせるようにしてもよいし、特定の人から杖本体に設けられている無線電話に電話してその位置を音声又はデジタル信号によって聞き出すようにしてもよい。本発明に係る盲人用杖において、杖本体は振動センサーを設け、振動センサーの出力を無線電話によって特定の人に通報可能にしてもよい。この場合、盲人用杖を使用することによって発生する振動を検知して、その振動情報を特定の人、例えば介護者に無線電話によって通報できるので、介護者が杖保持者の動作を離れた位置に居ても確認できる。なお、振動センサーの受信音をそのまま送信してもよいが、別の音声（例えば、「現在使用中です」）又は信号に変換して送ってもよい。

【0006】本発明に係る盲人用杖において、杖本体には、障害物を検知するセンサー部と、センサー部が障害物を検知したことによって警報を発する警報部とを有してもよい。この場合、杖保持者（例えば視覚障害者）が警報を聞いて、障害物があることを知り、自分で障害物を回避するか、周囲の人がその警報を聞いて杖保持者を援助して、障害物を回避したり安全な位置に導くことができる。本発明に係る盲人用杖において、警報部が発する警報は、音、音声、把手に設けられた点字のいずれか1又は2以上からなるようにしてもよい。この場合、例えば障害物に放射した超音波や光の反射波を受けて障害物の存在を検知できるセンサー部を用い、センサー部からの検出信号を警報部が受けて例えばスピーカー等により障害物に応じて音や音声を発生して、杖保持者が障害物に当接する前に障害物の状態を検知することができる。また、警報部に点字を表示させることにより、杖保持者が視覚・聴覚障害者である場合にも障害物の存在を知らせることができ、早めに障害物を回避する動作を行うことができる。点字の場合は複数の突出する突起の組み合わせになる。

【0007】本発明に係る盲人用杖において、無線電話には無線又は有線のヘッドホンを接続し、ヘッドホンを利用して通話ができるようにしてもよい。この場合、杖保持者が聴覚者であっても、ヘッドホンを利用して他人と通話できる。なお、マイクはヘッドホンに付設してもよいし、杖本体に設けてもよい。本発明に係る盲人用杖において、警報部には、警報を無線又は有線でヘッドホンに出力するヘッドホン出力部を有してもよい。この場合、警報部からの障害物を知らせる警報をヘッドホンから出力させることにより、聴覚者である杖保持者にも警報を知らせ、障害物を回避することができる。

【0008】本発明に係る盲人用杖において、センサー

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部は、超音波センサーであって、反射音の強さによって対象物を判断し、対象物の種類によって警報部から発する音の種類を変えるようにしてもよい。この場合、杖保持者が向き合った対象物が、例えば固い障害物が柔らかい障害物か等を検知して、予め対象物に対する対応を決めることができる。本発明に係る盲人用杖において、杖本体にはマイクロホンが設けられ、マイクロホンによって受信した音は警報部を介してヘッドホンに入力するようにしてもよい。この場合、杖保持者が聴覚者であっても周囲の音を聞いて周囲の状況を知ることができる。本発明に係る盲人用杖において、把手には、警報用押しボタンが設けられ、警報用押しボタンを押すことにより警報部が特殊音を発生するようにしてもよい。この場合、杖保持者が体に異常を感じたり、自分の立っている位置が分からなくなったとき等に、警報用押しボタンを押して周囲に注意を促す特殊音を発生させ、窮状を訴えて周囲の人に援助を求めることができる。

【0009】本発明に係る盲人用杖において、杖本体はパイプからなり、パイプの内部に電池、前記無線電話、前記警報部、及び前記全地球測位システム制御装置の一部又は全部等の全ての機器を収納するようにしてもよい。この場合、杖本体内に電池、無線電話、警報部、全地球測位システム制御装置等の各機能部材をコンパクトに、しかも軽量化にまとめることができる。本発明に係る盲人用杖において、杖本体の上部に太陽電池が設けられ、杖本体の内部に設けられた電池又はコンデンサに充電可能にしてもよい。この場合、盲人用杖に内蔵させたセンサー部、警報部、無線電話、GPS等の電源となる電池の寿命を長くすることができる。本発明に係る盲人用杖において、杖本体には必要に応じて点灯可能な照明ランプを設けてもよい。この場合、夜間でも杖保持者の動作が周囲の人に分かり、自動車や自転車からの危険を防止することができる。

【0010】

【発明の実施の形態】続いて、添付した図面を参照しつつ、本発明を具体化した実施の形態につき説明し、本発明の理解に供する。ここに、図1は本発明の第1の実施の形態に係る盲人用杖の側断面図、図2は同盲人用杖の構成図、図3は本発明の第2の実施の形態に係る盲人用杖の側断面図、図4は同盲人用杖の構成図、図5は本発明の第3の実施の形態に係る盲人用杖の側断面図、図6は同盲人用杖の構成図、図7は本発明の第4の実施の形態に係る盲人用杖の側断面図、図8は同盲人用杖の構成図である。

【0011】図1、図2に示すように、本発明の第1の実施の形態に係る盲人用杖10は、パイプ状の杖本体11を備え、杖本体11には上端に開口する電池収納部12が設けられ、電池収納部12の底部には一側接点13を有する接触用ばね14が設けられている。電池収納部12には、充電が可能な電池15（蓄積電力量が大きい

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コンデンサも含む)が収納され、電池収納部12の上端には+側接点16を設けた蓋17が取付けられ、電池収納部12の開口部を開けると共に、接触用ばね14の押圧力によって電池15と-側接点13、及び+側接点16との接触をよくしている。杖本体11の上端部には把手18が取付けられ、把手18の一方端部(図1では杖本体11より左側)には太陽電池19が設けられ、電池収納部12の下方には太陽電池19で発電した電力を所定の電圧、例えば3Vで電池15に充電する充電器20が設けられている。

【0012】杖本体11の中央部には、例えば小型の携帯電話器又はPHS電話器からなる無線電話21が設けられ、無線電話21には受話部22、送話部23及び無線電話21をオン・オフさせるスイッチからなる電話用押しボタン24を有し、無線電話21には電池15から電力が供給されている。杖保持者は電話用押しボタン24を押すことにより、特定場所の外部電話21Aに電話できるようにしている。なお、電話用押しボタン24は把手18に設けて電線を介して無線電話21に接続してもよい。無線電話21にはヘッドホン端子25を設け、リード線26を介して、杖本体11とは別体に設けたヘッドホン27を視聴自在に接続できるようにし、必要に応じてヘッドホン27から無線電話21によって受けた音声を聴くことができるようにしている。なお、ヘッドホン27が無線式の場合はリード線26は不要となる。杖本体11の下端部には石突き部28がねじ止めされている。

【0013】本発明の第1の実施の形態に係る盲人用杖10の動作を説明する。盲人用杖10を用いる杖保持者は、歩行中に身体や周囲に異常を感じたときに、無線電話21に設けられた電話用押しボタン24を押す。これにより、無線電話21によって特定場所の外部電話21Aに電話を掛け、無線電話21の受話部22と送話部23を利用して、又はヘッドホン27を利用して通話することができる。この場合、特定の人、例えば通常介護をしてもらっている人に電話によって連絡して、緊急時に対応することができる。また、ヘッドホン27を利用することにより、聴覚者でも周囲の音に邪魔されることなく通話することができる。なお、ヘッドホン27に小型のマイクロホンを取付けて、無線電話21の送話部23の代わりに使用し、口を無線電話21に近づけないで通話ができるようにしてもよい。

【0014】図3、図4に示すように、本発明の第2の実施の形態に係る盲人用杖30は、前記第1の実施の形態に係る盲人用杖10に、GPS(全地球測位システム制御装置)31を取付けて、杖保持者の現在位置を検知できるようにし、また振動センサー32を設けて杖保持者の動作を検知できるようにしている。なお、第1の実施の形態と共通する構成要素については同一名称、同一符号を付して説明を省略する。すなわち、把手18の一

方端部に設けた太陽電池19の下方にはGPS31を設け、GPS31によって杖保持者の位置情報を検知して、音声、文字、画像のいずれか1又は2以上の位置情報を発生し、その位置情報を無線電話21によって外部電話21Aに伝達できるようにしている。また、杖本体11の下部には、盲人用杖30を使用して歩行することによって杖本体11に発生する振動を検出する振動センサー32が設けられている。

【0015】ここで、本発明の第2の実施の形態に係る盲人用杖30の動作を説明する。予め無線電話21を間欠的に、例えば10〜30分間隔で介護者や家族等の特定の人と通話できる状態にしておく。そして、GPS31によって杖保持者の現在位置を確認し、その位置情報を無線電話21によって間欠的に特定の人に通報する。特定の入は杖保持者の位置情報を逐次、音声、デジタル信号からなる文字、画像のいずれか1又は2以上の位置情報を出力できる外部電話21Aによって得られるので、例えば杖保持者が道に迷って現在の位置が確認できないときに、直ちに杖保持者を保護することができる。また、特定の人から杖本体11に設けられている無線電話21に電話してその位置を音声又はデジタル信号によって聞き出すようにしてもよい。また、杖保持者が歩行中は、歩行の際に盲人用杖30に発生する振動を振動センサー32が検知して受信音(振動情報)を発生する。振動情報は無線電話21に入力され、間欠的に特定の人に通話できる状態にしている無線電話21によって警報音として通報され、杖保持者が盲人用杖30を使用していることを知らせる。これにより、特定の入は離れた位置、例えば自宅に居ても杖保持者が歩行中か停止しているか等の動作を確認できる。なお、振動センサー32の受信音をそのまま送信してもよいが、別の音声(例えば、「現在使用中です」)又は信号に変換して送ってもよい。

【0016】図5、図6に示すように、本発明の第3の実施の形態に係る盲人用杖40は、前記第2の実施の形態に係る盲人用杖30に、障害物を検出するセンサー部の一側である超音波センサー41と警報部42とを追加して設けて、障害物を検知して警報を発生させるようにしている。なお、第2の実施の形態と共通する構成要素については同一名称、同一符号を付して説明を省略する。すなわち、杖本体11の中央部にはスピーカー43とヘッドホン出力部44とを備えて警報を発生する警報部42を設けている。ヘッドホン出力部44にはヘッドホン端子44Aを設け、杖本体11とは別体に設けられたヘッドホン27をリード線26を介して視聴自在に接続できるようにしている。なお、杖本体11に設けた無線電話21のヘッドホン端子25は第1の連絡線45によりヘッドホン出力部44に接続されている。杖本体11の下方には超音波を前方(図5では杖本体11より左側)に向かって発信し、近くの障害物に当

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たって反射した反射音を検出する超音波センサー41が設けられている。

【0017】これにより、超音波センサー41は障害物に当たって反射した超音波の反射音によって物体検出信号を発生し、警報部42は物体検出信号に応じて警報発生信号を発生する。警報部42では物体検出信号によって障害物を検出すると共に、ヘッドホーン出力部44を介して警報発生信号をヘッドホーン27に入力し、ヘッドホーン27から警報音又は警報音声を発生するようにしている。なお、警報部42は反射音の強さに応じて障害物の種類を判別し、例えば障害物が壁のように固い場合には高い周波数の音を、人体のように柔らかい場合には周波数の低い音等、障害物の種類によって異なる周波数の音を発生する。また、障害物の種類によって周波数を変える代わりに発生する間隔を変えるようにしてもよい。把手18の中央部(図5では杖本体11より右側)には点字が突起として浮き出す点字表示部46が設けられて、警報部42からの警報発生信号により障害物を示す所定の簡単な点字を複数の突起の組み合わせによって表示するようにしている。

【0018】ここで、本発明の第3の実施の形態に係る盲人用杖40の動作について、説明する。杖保持者が盲人用杖40の把手18を握って歩行中に、超音波センサー41によって歩行者から30cm～1m程度の範囲にある障害物を検出すると、超音波センサー41は障害物に反射した反射音の強さに応じて複数種類の物体検出信号を発生し、警報部42に入力される。警報部42は検出した障害物の種類に応じた周波数の警報音又は警報音声を、杖保持者に聞こえる程度の音量でスピーカー43及びヘッドホーン27から発生させる。これにより、視覚障害者等の杖保持者は障害物の状態が、例えば壁や階段のように固いものか、人体のように柔らかいものか等を検知することができ、杖保持者は障害物に当接する前に障害物の知識を得て対応することができる。また、警報部42から発生する警報発生信号は点字表示部46に入力され、点字表示部46では警報発生信号に応じて、例えば「壁」、「人」等の簡単な点字表示をする。このように、警報部42の点字表示部46に点字を表示させることにより、視覚・聴覚障害者にも障害物の存在とその状態とを知らせることができ、早めに障害物を回避する動作を行うことができる。

【0019】図7、図8に示すように、本発明の第4の実施の形態に係る盲人用杖50は、前記第3の実施の形態に係る盲人用杖40に警報用押しボタン51、マイクロホン52、及び照明ランプ53を追加したものである。なお、第3の実施の形態に共通する構成要素については同一名称、同一符号を付して説明を省略する。すなわち、把手18の端部(図7では杖本体11より左側)には警報部42を動作させて特殊音を発生させるスイッチからなる警報用押しボタン51が設けられている。警

報用押しボタン51を押すことにより、警報部42はスピーカー43から警報音とは異なる音、例えば音圧が大きくて注目を引く特殊音を発生するようにしている。また、杖本体11の中間部にはマイクロホン52が設けられている。マイクロホン52は杖保持者の周囲で発生している音を受信し、その音を警報部42に入力して増幅し、スピーカー43とヘッドホーン27から警報音又は音声を発生するようにしている。更に、警報部42と無線電話21とは第2の連絡線54により接続され、警報用押しボタン51を押すことにより、警報部42を介して無線電話21を通話状態にし、無線電話21から特定の人に通話を可能にしている。マイクロホン52の下方には、例えば電力消費量の少ない発光ダイオード、あるいはエレクトロルミネッセンス(EL)等からなる照明ランプ53と照明ランプ53をオン・オフするスイッチからなるランプ用押しボタン55が設けられている。

【0020】ここで、本発明の第4の実施の形態に係る盲人用杖50の動作について、説明する。杖保持者の周囲から発生する音や音圧はマイクロホン52によって受信され、警報部42によって増幅されてヘッドホーン出力部44を介してヘッドホーン27から音や音声を発生させる。この場合、杖保持者が聴覚者であっても周囲の音を聞いて周囲の状況を知ることができる。また、夜間に杖保持者が歩行するときには、ランプ用押しボタン55を押すことにより照明ランプ53が点灯するので、夜間でも杖保持者の動作が周囲の人に分かり、自動車や自転車からの危険を防止することができる。また、杖保持者が体に異常を感じたり、自分の立っている位置が分からなくなったとき等には、警報用押しボタン51を押すことにより、警報部42はスピーカー43から警報音とは異なる周囲に注意を促す特殊音を発生させる。これにより、周囲の人に援助を求めることができる。また、警報用押しボタン51を押すことにより、無線電話21から外部電話21Aを通じて特定の人に通話が可能になるので、杖保持者の現状を通話できると共に、スピーカー43からの特殊音が自動的に特定の人に伝えられる。

【0021】以上、本発明の実施の形態に係る盲人用杖について説明してきたが、本発明は、何ら前記の実施の形態に記載の構成に限定されるものではなく、特許請求の範囲に記載されている事項の範囲内で考えられるその他の実施の形態や変形例も含むものである。例えば、前記実施の形態では、警報部が発する警報が、音、音声及び把手に設けられた点字によって表示される場合について説明したが、警報が音、音声及び点字の内の少なくとも1個を用い、他を省略してもよい。また、太陽電池19、GPS31の一部又は全部を把手18に設ける代わりに、杖本体11の内部に設けてもよい。また、把手18に手袋状のカバーを取付け、カバーに電話用押しボタン、警報用押しボタンを取付けてもよい。更に、ヘッド

ホーンの代わりに、聴聴者が使用する補聴器を使用し、縮時器と携帯電話の送受信ができるように電気的に接続して聴聴者が無線電話を利用して通話ができるようにしたり、縮時器と警報部のヘッドホーン出力部とを接続して、聴聴者に警報を明確に聞こえるようにしてもよい。

【0022】

【発明の効果】請求項1～13記載の盲人用杖においては、上部に把手を有する杖本体に無線電話が設けられ、無線電話に設けられた電話用押しボタンを押すことにより、特定場所に電話がかかり、通話ができるようにして

るので、例えば杖保持者が異常を感じたときや必要に応じて、電話用押しボタンを押して特定場所にいる人に電話によって連絡したり、援助を求めることができる。

【0023】特に、請求項2記載の盲人用杖においては、杖本体に全地球測位システム制御装置（GPS）が内蔵され、全地球測位システム制御装置によって検知された位置を無線電話によって特定の人に通報可能にしている

ので、GPSによって常に杖保持者の居る位置が確認し、道に迷ったときでも直ちに保護することができる。

請求項3記載の盲人用杖においては、杖本体は振動センサーを設け、振動センサーの出力を無線電話によって特定の人に通報可能にしている

ので、特定の人又は盲人用杖を使用することによって発生する振動を検知して、杖保持者の動作を離れた位置に居ても確認できる。

【0024】請求項4記載の盲人用杖においては、杖本体に設けられたセンサー部と、センサー部が障害物を検知したことによって警報を発する警報部とを有するので、杖保持者が警報を聞いて、障害物があることを知り、自分で障害物を回避するか、周囲の人がその警報を聞いて杖保持者を援助して、障害物を回避したり安全に歩行することができる

請求項5記載の盲人用杖においては、警報部が発する警報は、音、音声、把手に設けられた点字のいずれか1又は2以上からなっているので、センサー部からの検出信号を警報部が受けて例えばスピーカー等により障害物に応じて音や音声を発生して、杖保持者が障害物に当接する前に障害物の状態を検知することができる

また、警報部に点字を表示させることにより、杖保持者が視覚・聴覚障害者である場合にも障害物の存在を知らせることができ、早めに障害物を回避する動作を行うことができる

請求項6記載の盲人用杖においては、無線電話に無線又は有線のヘッドホーンが接続され、ヘッドホーンを利用して通話ができるようにしている

ので、聴聴者でも必要に応じて特定の人と連絡をとることができる

【0025】請求項7記載の盲人用杖においては、警報部にヘッドホーンの出力部を有しているので、警報部からの障害物を知らせる警報をヘッドホーンから出力させることにより、聴聴者である杖保持者にも警報を知らせ、障害物を回避することができる

請求項8記載の盲人用杖においては、センサー部は、超音波センサーであ

って、反射音の強さによって対象物を判断し、対象物の種類によって警報部から発する音の種類が変わるようにしている

ので、杖保持者が向き合った対象物の種類を検知して、予め対象物に対する対応を決めることができる。

【0026】請求項9記載の盲人用杖においては、杖本体にマイクロホーンが設けられ、マイクロホーンによって受信した音はヘッドホーンに入力するようにしているので、杖保持者が聴聴者であっても周囲の音を聞いてその状況を知り、周囲の環境に直ちに対応することができる

請求項10記載の盲人用杖においては、把手に警報用押しボタンが設けられ、警報用押しボタンを押すことにより警報部が特殊音を発生するようにしているので、杖保持者が体に異常を感じたり、自分の立っている位置が分からなくなったとき等に、警報用押しボタンを押して周囲に注意を促す特殊音を発生させ、弱状を訴えて周囲の人に援助を求めることができる

【0027】請求項11記載の盲人用杖においては、杖本体はパイプからなり、パイプの内部に電池、無線電話、警報部、及びGPSの一部又は全部が収納されている

ので、盲人用杖をコンパクトに、しかも軽量化に構成することができる

請求項12記載の盲人用杖においては、杖本体の上部に太陽電池が設けられ、杖本体の内部に設けられた電池に充電可能にしている

ので、盲人用杖に内蔵させたセンサー部、警報部、無線電話、GPS等の電源となる電池の寿命を長くすることができる

請求項13記載の盲人用杖において、杖本体には必要に応じて点灯可能な照明ランプが設けられているので、夜間でも杖保持者の動作が周囲の人に分かり、自動車や自転車からの危険を防止することができる

【図面の簡単な説明】

【図1】本発明の第1の実施の形態に係る盲人用杖の側断面図である。

【図2】同盲人用杖の構成図である。

【図3】本発明の第2の実施の形態に係る盲人用杖の側断面図である。

【図4】同盲人用杖の構成図である。

【図5】本発明の第3の実施の形態に係る盲人用杖の側断面図である。

【図6】同盲人用杖の構成図である。

【図7】本発明の第4の実施の形態に係る盲人用杖の側断面図である。

【図8】同盲人用杖の構成図である。

【符号の説明】

10：盲人用杖、11：杖本体、12：電池収納部、13：一側接点、14：接触用ばね、15：電池、16：+側接点、17：蓋、18：把手、19：太陽電池、20：充電器、21：無線電話、21A：外部電話、22：受話部、23：送話部、24：電話用押しボタン、25：ヘッドホーン端子、26：リード線、27：ヘッ

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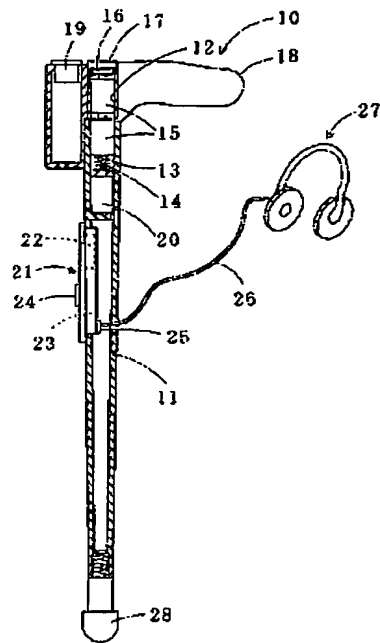
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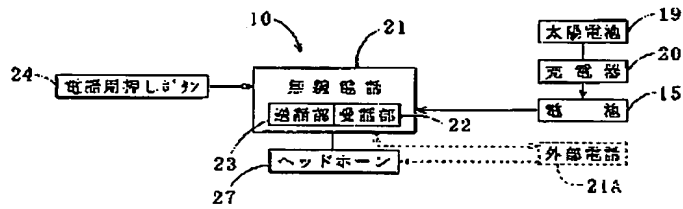
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ドホン、28：石突き部、30：盲人用杖、31：G
 PS、32：振動センサー、40：盲人用杖、41：超
 音波センサー、42：警報部、43：スピーカー、4
 4：ヘッドホン出力部、44A：ヘッドホン端子、*
 *45：第1の連絡線、46：点字表示部、50：盲人用
 杖、51：警報用押しボタン、52：マイクロホン、
 53：照明ランプ、54：第2の連絡線、55：ランプ
 用押しボタン

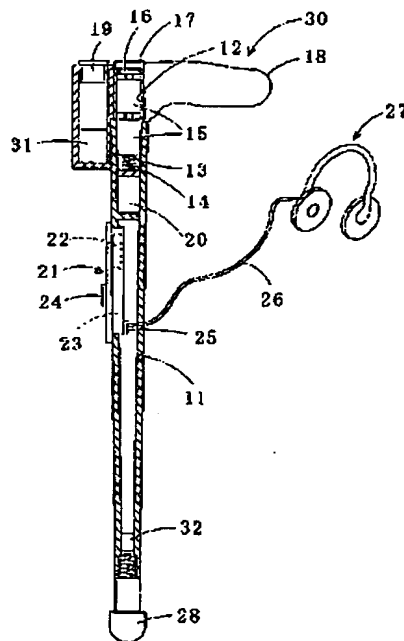
【図1】



【図2】



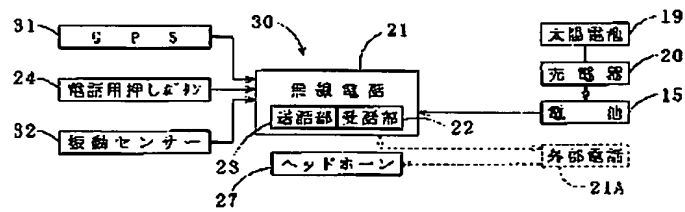
【図3】



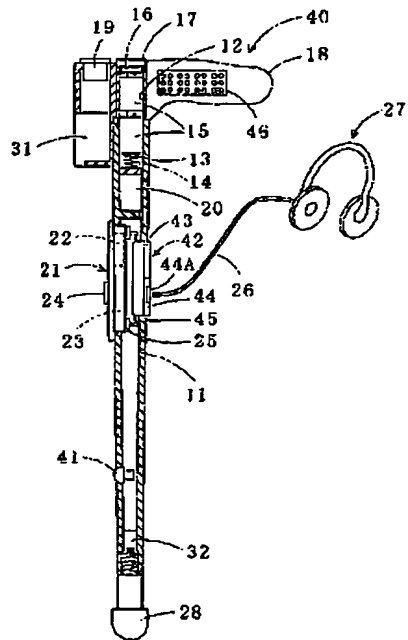
(8)

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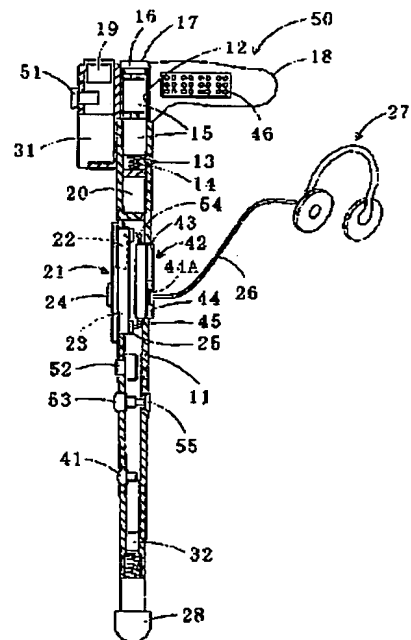
【図4】



【図5】



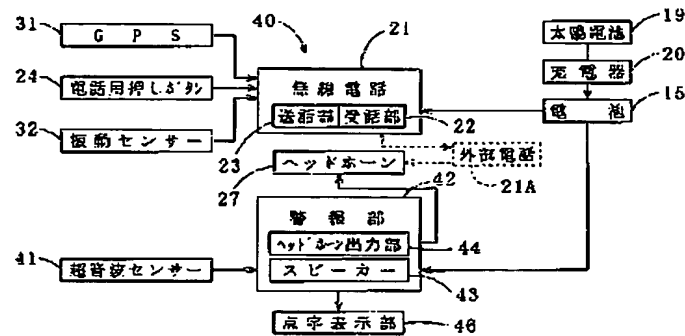
【図7】



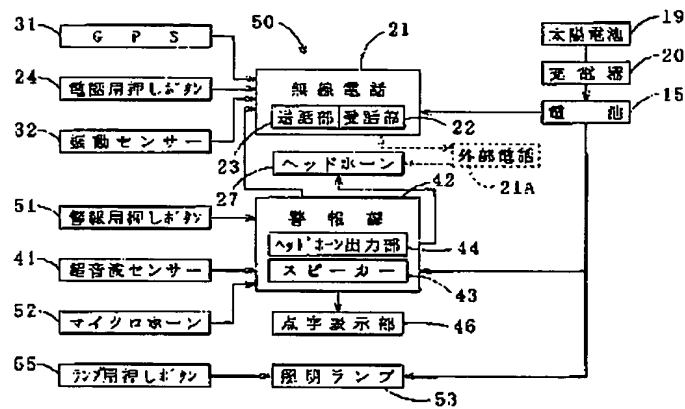
(9)

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【図6】



【図8】



フロントページの続き

(51)Int.Cl.

H04M 1/00
1/02
1/21
1/725
11/04

識別記号

F i

H04M 1/00
1/02
1/21
1/725
11/04

フーワード (参考)

U 5K027
C 5K101
M

(10)

特開2002-330807

F ターム(参考) 2F029 AA07 AB07 AB12 AC02 AC09
AC13 AC18
3B104 AA02 AA03
5H180 AA23 BB05 BB09 CC11 CC12
FF05 FF13 FF25 LL01 LL02
LL07 LL08
5J062 AA07 AA08 BB05 CC07
5K023 AA07 BB11 EE03 HH10 LL06
MM00 MM07 MM26
5K027 AA11 BB01 FF25 GG03 HH26
HH30 MM04 MM13
5K101 KK14 LL12 MM07 NN01 NN12
NN41 PP03 RR12